Enrichmente culturing of organic-gas producing bacteria from cold seawater

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In order to clarify the bacterial production of organic gas (dibromomethane) in the cold seawater, we monitored organic gass production as well as bacterial community compositon in the methanol- and the bromoform-added seawater during 30-days incubation experiments in a low-temperature room. An organic gas of dibromomethane was higher in the substrate added treatments than that in the control where no organic substrate was added. Similarly, bacterial abundance, which was estimated from 16S rRNA gene copy number using quantitative real time PCR (qPCR), increased with time for the methanol- and the bromoform-added treatments. A PCR-DGGE analysis of 16S rRNA gene showed that bacterial community comoposition was different in the treatment bottoles, and DNA sequencing analysis of DGGE bands identified that one of the dominant taxa was close to genus *Methylophaga*, which is the methylotroph using methanol and methiammine for the productivity. These result suggest that organic gas as dibromomethane was produced by the bacteria using the methanol as an substrate and resulting the dehalogenation of bromoform. Our present results provide the clue for the bacterial production of organic gas in the cold water of the polar oceans.